



UNITED STATES PATENT AND TRADEMARK OFFICE

[Signature]
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/614,255

07/03/2003

Mary Wilkes Eubanks

6006

7590
Mary Wilkes Eubanks
8 Pilton Place
Durham, NC 27705

09/04/2007

EXAMINER

ROBINSON, KEITH O NEAL

ART UNIT

PAPER NUMBER

1638

MAIL DATE

DELIVERY MODE

09/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/614,255

Applicant(s)

EUBANKS, MARY WILKES

Examiner

Keith O. Robinson, Ph.D.

Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23 is/are allowed.
- 6) ☒ Claim(s) 24-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's appeal brief, filed May 26, 2007 has been received and entered in full; however, prosecution for this case has been re-opened and thus, the finality of the rejection of the last Office action, mailed November 29, 2006, has been withdrawn.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action mailed August 11, 2005.
3. The rejection of claim 23 under 35 U.S.C § 103 on pages 14-15 of the Office Action mailed November 29, 2006 has been overcome in light of the claim amendment filed February 26, 2007. The rejection has been withdrawn; therefore, it is not necessary for Applicant to make arguments with regards to this rejection. It is suggested that Applicant remove the arguments on pages 21-23 with regards to this rejection of claim 23.
4. In the 'Claims Appendix' on pages 23-29 of the 'Appeals Brief' filed May 26, 2007, Applicant has used the wrong identifiers in claims 23-43. Applicant is required to make the appropriate corrections.
5. It is noted that Applicant is appealing 'Word informalities' (see page 10 of the 'Appeal Brief' filed May 26, 2007); however, this is not appealable. It is suggested that it is removed from any subsequent 'Appeal Brief'. Objections should be petitioned.
6. Claims 23-43 are under examination.

New Claim Objections

7. Claims 26-43 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only

Art Unit: 1638

and cannot depend from any other multiple dependent claim. See MPEP § 608.01(n).

Appropriate correction is required.

Claim Rejections - 35 USC § 112, first paragraph – Written Description

8. Claims 24-31 and 33-43 remain rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The rejection is repeated for the reasons of record as set forth in the Office Action mailed November 29, 2006 (see pages 3-8). Applicant's arguments have been fully considered but are not found persuasive.

In the 'Appeal Brief', filed May 26, 2007, Applicant argues the disclosure provides literal support for the specific claimed subject matter of each claim (see page 11, last paragraph to page 16, 2nd paragraph).

This is not persuasive. Applicant makes reference to specification as support for the claimed inventions; however, the Examiner maintains that there is no literal support in the specification. For example, Applicant states that support for claims 24-27 (a maize seed (or a part thereof) identified by the claimed method) can be found on page 13, lines 17-23 and page 14, lines 13-18. Page 13, lines 17-23 only recites a method to produce a maize x *Tripsacum-teosinte* plant and page 14, lines 13-18 simply states, "[t]his invention relates to hybrid seed, hybrid plants, [etc.]...derived from [maize x

(Tripsacum x teosinte)] or maize x [maize x (teosinte x Tripsacum)]”. Neither of these references provide support that Applicant was in possession of the claimed invention. Applicant further argues that literal support can be found for claims 28-32, 35 and 43 on, for example, page 7, lines 24-30; however, this citation simply states, “[f]easibility has been demonstrated in plants derived from crossing Tripsacum-teosinte recombinants with maize that [have the claimed characteristics]”. This citation, as well as the others cited as support for these claims, does not provide support that Applicant was in possession of the claimed inventions. The same lack of support is found in claims 33, 34 and 36-42 as well.

See MPEP 2163(I) where it states “[t]o satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. See, e.g., Moba, B.V. v. Diamond Automation, Inc., 325 F.3d 1306, 1319, 66 USPQ2d 1429, 1438 (Fed. Cir. 2003); Vas-Cath, Inc. v. Mahurkar, 935 F.2d at 1563, 19 USPQ2d at 1116”.

The specification fails to provide evidence for one skilled in the art to reasonably conclude that Applicant had possession of the claimed inventions.

MPEP 2163.02 further states, “[u]nder Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir.1991), to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed”.

In the instant case, Applicant has not conveyed with reasonable clarity to those skilled in the art that, as of the filing date sought, that Applicant was in possession of the claimed inventions.

Claim Rejections - 35 USC § 112, first paragraph - Enablement

9. Claims 24-31 and 33-43 remain rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The rejection is repeated for the reasons of record as set forth in the Office Action mailed November 29, 2006 (see pages 8-11). Applicant's arguments have been fully considered but are not found persuasive.

In the 'Appeal Brief', filed May 26, 2007, Applicant argues the rejection no longer stands because of wording changes (see page 16, last paragraph).

This is not persuasive. Regardless, of any word changes, the claims are not enabled because the specification fails to provide any guidance regarding the claimed plants with the claimed characteristics. One of skill in the art would not be able to make and use the claimed inventions because specification fails to provide any guidance regarding the traits associated with the claimed markers and fails to provide any evidence of any of the claimed plants.

The specification does provide guidance regarding plants having corn rootworm resistance (which is not claimed) associated with RFLP markers UMC103, BNL5.37, UMC28, UMC95 and/or their respective SSR markers bnlg2235, dupSSR23, phi123,

Art Unit: 1638

and bnlgl1714, respectively, and plants having roots that contain aerenchyma (see page 24, 3rd paragraph and page 27, 1st paragraph) associated with RFLP marker BNL8.32 and/or its respective SSR marker bnlgl1805. However, there is no such guidance for the other claimed plants (claims 24-31 and 33-43).

Applicant argues that the disclosure describes a simple process of rapid detection of alleles associated with a trait of interest by comparing the molecular weights of the probe/enzyme fragments in progeny expressing a particular agronomic trait to progeny that do not express that trait (see page 17, 3rd paragraph of the 'Appeal Brief' filed May 26, 2007).

This is not persuasive. The disclosure does not disclose how to make and use the plants of claims 24-31 and 33-43. It is unclear how one skilled in the art would make and use, for example, a plant that is resistant to aflatoxin, as claimed in claim 30. It is unclear which, if any, of the cited markers in claim 23 are associated with aflatoxin. The specification discloses the markers associated with plants having roots that contain aerenchyma (see page 24, 3rd paragraph and page 27, 1st paragraph); however, no such disclosure can be found for the other claimed plants of claims 24-31 and 33-43.

Applicant argues that the disclosure distinctly enables one skilled in the art to make a cross between *Tripsacum* sp. and teosinte and that such a cross would enable one skilled in the art to recover recombinant plants that will contain one or more novel alleles (see page 17, 4th paragraph of the 'Appeal Brief' filed May 26, 2007).

This is not persuasive. Though one of skill in the art can make a cross between *Tripsacum* sp. and teosinte, it would not enable the claimed inventions because it is

Art Unit: 1638

unclear which, if any, of the cited markers in claim 23 are associated with the claimed traits of the claimed plants in claims 24-31 and 33-43. It is unclear how one skilled in the art would make and use, for example, a plant that has more extensive, robust roots, as claimed in claim 41 by simply crossing a *Tripsacum* sp. plant and a teosinte plant. It is unclear how one skilled in the art would identify such a plant, when the specification fails to disclose which, if any, of the claimed markers are associated with the claimed invention.

Applicant cites *Gould v. Quigg* where it states, "The specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without undue experimentation" (see page 18, 1st full paragraph of the 'Appeal Brief' filed May 26, 2007).

This is not persuasive. It would require undue trial and error experimentation to make and use the claimed inventions because the specification does not disclose which, if any, of the cited markers are associated to the claimed plants. Applicant is correct in stating that the specification provides two working examples that teach how to determine the association of novel alleles from claim 23 with a trait (namely corn rootworm resistance (which is not claimed) and aerenchyma), but it is unclear if any of the markers associated with these traits are also associated with the other traits of the plants of claims 24-31 and 33-43. For example, it is unclear if one skilled in the art could use RFLP marker BNL8.32 and/or its respective SSR marker bnlg1805 (which is associated with aerenchyma (see page 24, 3rd paragraph and page 27, 1st paragraph))

to produce, for example a plant that exhibits perennialism, as is claimed in claim 43.

Thus, the specification is not enabled for the plants of claims 24-31 and 33-43.

Claim Rejections - 35 USC § 102

10. Claims 24-27 remain rejected under 35 U.S.C. 102(b) as being anticipated by Eubanks (U.S. Patent No. 5,330,547, 1994). The rejection is repeated for the reasons of record as set forth in the Office Action mailed November 29, 2006 (see pages 11-13). Applicant's arguments have been fully considered but are not found persuasive.

In the 'Appeal Brief' filed May 26, 2007, Applicant argues because a certain result or characteristic may occur or be present in the prior art, it is not sufficient to establish the inherency of that result or characteristic (see page 19, 2nd full paragraph).

This is not persuasive. One skilled in the art would understand that the plants disclosed by Eubanks would inherently possess the claimed restriction fragments because Eubanks discloses plants produced by the exact method as claim 23, namely crossing a *Tripsacum* plant with a teosinte plant and then crossing the hybrid of said cross with a maize plant (see column 7, lines 14-23 and columns 12-14, Tables 1-2). Therefore, the plants claimed in claims 24-27 are anticipated by the plants disclosed by Eubanks, namely B73 x *Tripsacorn*, G4522 x *Tripsacorn*, G4533 x Sun Dance and W 64 A x *Tripsacorn*.

Applicant argues that to satisfy the inherency rule, the *Tripsacorn* recombinant in U.S. Patent 5,330,547 should possess all the fragments in Tables 2 and 3 of the disclosure and that it is evident that the fragments of claim 23 may occur but are not

necessarily present in the plants of U.S. Patent 5,330,547 (see page 19, last paragraph to page 20, 1st full paragraph of the 'Appeal Brief' filed May 26, 2007).

This is not persuasive. See *In re Best*, 195 USPQ 430, 433 (CCPA 1997), which teaches that where the prior art product seems to be identical to the claimed product, except that the prior art is silent as to a particularly claimed characteristic or property, then the burden shifts to Applicant to provide evidence that the prior art would neither anticipate nor render obvious the claimed invention.

In the instant case, Applicant has not provided evidence that the plants disclosed by Eubanks do not possess the fragments of claim 23; therefore, plants disclosed by Eubanks read on the claimed invention.

11. Claims 24-27 remain rejected under 35 U.S.C. 102(b) as being anticipated by Eubanks (U.S. Patent No. 5,750,828, 1998). The rejection is repeated for the reasons of record as set forth in the Office Action mailed November 29, 2006 (see pages 11-13).

It is noted that Applicant did not address the rejections; thus, the rejection is maintained.

New Claim Rejections - 35 USC § 102/103

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1638

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 28-43 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Eubanks (U.S. Patent No. 5,750,828, 1998), taken with the evidence of Smith et al (Theor. Appl. Genet. 95: 163-173, 1997). The claims read on plants having various phenotypic characteristics produced by crossing a *Tripsacum*-teosinte hybrid with maize and identifying said plants with various traits using molecular markers.

Eubanks teaches plants produced by crossing a *Tripsacum*-teosinte hybrid with maize and identifying said plants that were resistant to rootworm using a bioassay (see column 11, line 45 to column 14, line 12 and Tables I and II, wherein it discloses B73 (a maize line) crossed with *Tripsacorn* (which is produced by crossing *Tripsacum* and teosinte) to produce plants with a rootworm resistance trait).

Eubanks does not teach plants identified using molecular markers; however, one of ordinary skill in the art would understand that the identification of plants can be done with assays or markers. One of ordinary skill in the art, at the time of the filing of the application, would have known that markers were available to identify maize plants with various traits because Smith et al teach SSR markers in maize "to characterize and identify maize inbred lines, validate pedigree, and show associations among inbred lines" (see Abstract).

The plants taught by the prior art differs from the claimed plants only in their method of making, namely by the use of molecular markers to identify the claimed

Art Unit: 1638

plants. However, the method of making the claimed plants would not distinguish it from the prior art plants. See *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), which teaches that a product-by-process claim may be properly rejectable over prior art teaching the same product produced by a different process, if the process of making the product fails to distinguish the two products.

In the instant case, there is no evidence that would suggest that the plants taught by Eubanks would not possess the claimed characteristics of the plants claimed in claims 28-43.

See *In re Best*, 195 USPQ 430, 433 (CCPA 1997), which teaches that where the prior art product seems to be identical to the claimed product, except that the prior art is silent as to a particularly claimed characteristic or property, then the burden shifts to Applicant to provide evidence that the prior art would neither anticipate nor render obvious the claimed invention.

In the instant case, the prior art plants seem identical to the claimed plants because they each were produced by crossing a *Tripsacum-teosinte* hybrid with a maize line.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of Applicant's invention to use the teachings of Eubanks to produce the claimed inventions.

One of ordinary skill in the art would have been motivated to utilize the teachings of Eubanks because Eubanks teaches that *Tripsacum-teosinte* hybrids are cross-fertile with maize lines (see page column 4, lines 19-21).

Art Unit: 1638

In addition, one of ordinary skill in the art would have reasonable expectation of success based on the success of Eubanks in producing plants produced from a cross of a *Tripsacum-teosinte* hybrid with a maize line.

Conclusion

15. Claim 23 is allowed.

16. Claims 24-43 are rejected.

Contact Information

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith O. Robinson, Ph.D. whose telephone number is (571) 272-2918. The examiner can normally be reached Monday – Friday, 7:30 a.m. - 4:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached at (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Application/Control Number: 10/614,255

Page 13

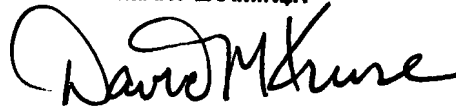
Art Unit: 1638

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Keith O. Robinson, Ph.D.

August 29, 2007

DAVID H. KRUSE, PH.D.
PRIMARY EXAMINER

A handwritten signature in black ink, reading "David H. Kruse". The signature is written in a cursive style with a large, looping "D" and a long, sweeping "K".